

## REMARKS

Claims 1-11 are pending in this application. By this Amendment, claims 1, 7, and 9 have been amended to more particularly point out and distinctly claim the present subject matter. Claims 8, 10 and 11 have been cancelled without prejudice or disclaimer. No new matter has been added as a result of this Amendment.

### *Claim Rejections*

#### Rejections Under 35 U.S.C. § 103

##### A. Response to rejection of claims 7-11 under 35 U.S.C. §103(a) as being unpatentable over Chen et al.

In response to the rejection of claims 7-11 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,084,115 of Chen et al. (“Chen”), Applicants submit that a *prima facie* case of obviousness has not been made out.

With respect to the rejection under §103, in order to establish a *prima facie* case of obviousness, the Examiner must establish all three of the following essential criteria: (1) the cited reference must teach or suggest each of the claimed elements (MPEP §2143.03); (2) there must be a motivation in the cited prior art to modify the reference as suggested by the Examiner (MPEP §2143.01); and (3) the cited reference must provide a basis for a reasonable expectation for success (MPEP 2143.02). The motivation to modify and the reasonable expectation for success must come from the cited prior art and not the Applicants’ specification. Further, it is not enough that a reference can be modified absent a suggestion in the cited prior art to undertake such modification (MPEP §2143.01).

First, the reference does not teach all the elements of the claimed subject matter. Claims 7 and 9 recite that p is 2, so that the metal M has an oxidation state of +4. Chen clearly teaches that “M is titanium, zirconium or hafnium in the +2 formal oxidation state.” (col. 2, lines 27-28, *emphasis added*) The catalyst used in Example 14 of the reference, cited by Examiner, contains zirconium in a +2 oxidation state. Further, the 1,3 butadiene of element “D” in Chen’s formula  $MX_2D$  does not correspond to the X’s in the presently claimed subject matter. Therefore, Chen clearly does not teach all the elements of the claimed subject matter.

Second, there would be no motivation to modify the reference as suggested by the Examiner to arrive at the presently claimed subject matter. Merely because one could have produced a metallocene compound as recited in the claims does not mean that the metallocene compound would have been obvious. The Examiner has not demonstrated where in the cited reference there is a suggestion to modify the reference to arrive at the claimed metallocene, and why one would modify the teaching of the reference to produce such a metallocene. The kind of suggestion which would strongly motivate one to modify the teaching of the reference. Moreover, Chen relates to bridged Group 4 metal complexes containing a neutral diene ligand. Modifying the reference as suggested, i.e., by eliminating the diene ligand, would render Chen unsuitable for its intended purpose. Therefore, there would be no motivation to modify the reference as suggested by the Examiner.

Finally, there is no reasonable expectation of success since there is no predictability in modifying the teaching of the reference to arrive at the present invention, as suggested by the Examiner. Therefore, none of the elements of a *prima facie* case of obviousness has been made out.

However, even if a *prima facie* case of obviousness had been made out by the Examiner, Applicants have demonstrated unexpected positive results to overcome such a case. Results of Chen are summarized in Table 1.

Table 1

Catalyst	Run	Cocatalyst	Supported/ not-supported	Mw	Mn
Ex. 10	1		Not supported	75,200	32,600
Ex. 14	4		Not supported	42,500	17,200
Ex. 10	5	A	Not supported	192,000	107,000
Ex. 14	11	A	Not supported	60,500	34,200
Ex. 10	6	B	Not supported	61,000	32,600
Ex. 14	12	B	Not supported	61,000	32,600
Ex. 10	13		Supported	57,600	21,000
Ex. 14	16		Supported	236,000	65,000

Example 14 has been cited by the Examiner in the Office Action. Of the catalysts tested in the reference, Example 10 is the most similar to that of comparative catalyst (A-2) in the present specification. Chen's data illustrates that for supported catalyst systems, shown in experimental run numbers 13 and 16, the polymers produced using the catalyst of example 14 possess higher molecular weight than that using the catalyst of example 10. However, for non-supported catalyst systems, shown in experimental run numbers 1, 4-6, and 11-12, the polymers produced using the catalyst of example 14 produce polymers having molecular weights equal to or lower than those using the catalyst of example 10. In contrast, example 2, using catalyst (A-1), and example 4, using catalyst (A-2), shown in Table 1 of the present specification demonstrate higher molecular weights of polymer produced in a non-supported catalyst system. In view of Chen's own teaching, Applicants respectfully submit that the above data represent unexpected positive results that overcome any *prima facie* case of obviousness made out by the Examiner.

Reconsideration and withdrawal of the rejection respectfully is requested.

B. Response to rejection of claims 1-6 under 35 U.S.C. §103(a) as being unpatentable over Chen.

In response to the rejection of claims 1-6, under 35 U.S.C. 103(a) as being unpatentable over Chen, Applicants submit that a *prima facie* case of obviousness has not been made out.

As discussed above with respect to the metallocene claims, Chen does not teach or suggest the metallocenes recited in the present subject matter, much less a process to polymerize 1-butene polymers using those metallocenes. To modify the reference so as to teach the currently recited subject matter as suggested by the Examiner would require not only modifying the metallocene to eliminate the diene ligand as discussed above, but also to then use that modified metallocene in particularly for the polymerization of 1-butene. There is no motivation to make such a modification and no reasonable expectation of success. Therefore, no *prima facie* case of obviousness has been made out. However, even if a *prima facie* case of obviousness had been made out, Applicants have demonstrated unexpected results to overcome such a case, as discussed above.

Reconsideration and withdrawal of the rejection respectfully is requested.

Applicants respectfully request that a timely Notice of Allowance be issued in this case. Should the Examiner have questions or comments regarding this application or this Amendment, Applicant's attorney would welcome the opportunity to discuss the case with the Examiner.

The Commissioner is hereby authorized to charge U.S. PTO Deposit Account 08-2336 in the amount of any fee required for consideration of this Amendment.

This is intended to be a complete response to the Office Action mailed May 22, 2006.

Respectfully submitted,

William Reed

William R. Reid  
Registration No. 47,894  
Attorney for Applicant

I hereby certify that this correspondence is being deposited with sufficient postage thereon with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on September 22, 2006.

2006.  
June A. Della  
September 22 2006  
Date of Signature

Date of Signature

Basell USA Inc.  
912 Appleton Road  
Elkton, MD 21921  
Attorney's Telephone No.: 410-996-1783  
Attorney's Fax No.: 410-996-1560